A. Cover Sheet

1. Specify: [ ] agricultural project or [X] individual application or
[X] urban project [ ] joint application

2. Proposal Title: Water Softener Pilot Program

3. Principal Applicant: Municipal Water District of Orange County

4. Contact Name, Title: Joseph M. Berg, Water Use Efficiency Programs Manager

5. Mailing address: 10500 Ellis Avenue, P.O. Box 20895, Fountain Valley, CA 92728

6. Telephone: 714/593-5008

7. Fax: 714/964-9389

8. E-mail: jberg@mwdoc.com

9. Funds Requested: $100,000

10. Applicant cost share funds pledged: $207,005 cash + $50,000 inkind = $257,005 total

11. Duration: 7/2001 to 7/2002

12. State Assembly and Senate districts and Congressional district(s) where the project is to be conducted:

State Assembly Districts:	67, 68, 69, 70, 71, 72 & 73
State Senate Districts:	33, 34, 35, & 38
Congressional District:	39, 41, 45, 46, 47 & 48

13. Location and geographic boundaries of the project: Orange County and Inland Empire Utility Agency

14. Name and signature of official representing applicant. By signing below, the applicant declares the following: ___the truthfulness of all representations in the proposal; ___the individual signing the form is authorized to submit the application on behalf of the applicant; ___the applicant will comply with contract terms and conditions identified in Section 11 of this PSP.

Joseph M. Berg _____
(printed name of applicant) (date)

_____
(signature of applicant)

Water Softener Pilot Program

Proposal

Water Use Efficiency Program
California Department of Water Resources
U.S. Department of the Interior
CALFED Bay-Delta Program

submitted by

The Municipal Water District of Orange County
10500 Ellis Avenue
P.O. Box 20895
Fountain Valley, CA 92728
tel: 714/593-5008
fax: 714/964-9389
Contact: Joseph M. Berg

in collaboration with

Orange County Sanitation District
Orange County Water District
Inland Empire Utility Agency
Metropolitan Water District of Southern California

Contents

A. Cover Sheet

(see cover sheet file)

B. Scope of Work

Relevance and Importance

1. Abstract (Executive Summary)

Residential water softening units are point-of-use treatment fixtures designed to affect finished water quality. While this technology has evolved quickly, some of the early designs have low water or energy efficiency and can add salts to the household wastewater effluent. This addition to the salt balance can affect existing ground water supplies, salinity management goals, and the economics of future recycled water supplies. With an increasing customer concern about finished water quality, it is important for water agencies to work with the POU treatment industry to improve the efficiency and mitigate negative effects of less than optimal implementation of water softening technology.

The proposed program is designed to address the following questions:

- How many self-regenerating units are really out there?
- How many are water and salt efficient? Energy efficient?
- How much does each type of unit contribute to system TDS?
- How much do they contribute to groundwater or surface water TDS?
- How can effective and cost-effective water softener conservation programs be designed?
- What is the cost and effectiveness of such programs?
- How can such a program best stimulate market transformation to water and salt efficient water softeners?

a) Description of the Project

Design and implement pilot program address impacts of water softening units:

- Develop collaborative and working relationships with softener industry and staff
- Develop collaborative program and create incentive for replaceable regeneration units (central processing) and/or self-regenerating units that are water and salt efficient.
- Softener companies could offer discounts for preferred systems to "piggy back" on their marketing plans.
- Agencies could offer a co-pay share or they could bulk purchase and sell at a discount.
- Agencies could also offer an incentive to cover some level of installation costs.

b) Methods

Assess Magnitude and Scope of Problem

- Survey households to determine current saturation of softeners—self-regenerating and replacement types.
- Contact and work with industry marketing groups.

- Search for prevalence statistics in the literature and in other programs.
- Search for information on the salt problem in the literature and in other programs.

Summarize other attempts to reduce water softener problems by improve water and salt efficiency.

Assess costs and benefits of alternative program designs. Programs may include, for example:

- Consumer information on water, salt, and energy efficiency (low-intervention end of the spectrum)
- Incentives for water- and salt-efficient units
- Collaborative program with softener industry marketing efforts
- Requirements for water- and salt-efficient units
- Ban on inefficient units
- Ban on all self-regenerating units (high intervention end of the spectrum)

Design and implement pilot program, for example:

- Work with softener industry marketing staff
- Develop collaborative program and create incentive for replaceable regeneration units (central processing) and/or self-regenerating units that are water and salt efficient.

c) Objectives

Contribute to CALFED, state, regional, and local conservation goals by:

- Implementing a water softener conservation program
- Adding to, and disseminating, knowledge of the magnitude and character of the problem
- Developing most effective implementation program designs and testing them
- Characterizing applicability of the results to other regions in California
- Consider adopting water softeners as a BMP or PBMP.
- Reduce demand for water imported from the Bay-Delta ecosystem
- Evaluate the conservation savings and costs from regional, local agency and retail customer perspectives
- Evaluate implementation successes and failures and, in so doing, improve design of future programs

2. Statement Of Critical Local, Regional, Bay-Delta, State and Federal Water Issues

a) Why is this project needed?

Residential sector water softener challenges:

- There are growing number of water softeners; consumer demand for high quality water is high and growing.
- Self-regenerating softeners that use extra water and produce salty wastewater.

- Some of the recent technology self-regenerating units are more efficient with water and salt than the old ones.
- Central-plant regeneration (replaceable units) can add scale-efficiencies in the use of water and salt, and provide salt disposal (e.g., brine line disposal).

General water supply and quality issues:

- Reliance on imported water from the Bay-Delta, with concomitant ecosystem impacts.
- Relatively high TDS of imported water.
- Large potential for groundwater storage in the Inland Empire that will depend on careful salinity management.
- Large existing system of storage and supply of low TDS groundwater in Orange County that depends on careful salinity management.
- Increase in TDS in sewer discharge from residential softeners increases the TDS of source water for reclaimed water systems, adding costs for TDS removal. Reclaimed water is used for landscape, industrial, and groundwater management purposes, all of which have important TDS requirements.
- In shallow-aquifer areas, where groundwater is under the influence of surface water, the increase in surface water salts can add to groundwater TDS.
- In areas where groundwater is not under the influence of surface water, and groundwater has relatively low TDS (e.g., Orange County), increase in TDS in the water system increases demand for low TDS groundwater for blending to meet basin management plans.

b) Who wants it and why?

- Conservation policy makers are interested because this study can form part of the defensible basis for creating a new BMP or PBMP for water softeners.
- Consumer demand is high for high quality water that is cost-effective and conservation oriented.
- The CALFED Bay-Delta Program and associated agencies should find attractive the potential for reduction in export demand for Bay-Delta supply and the potential for reduced runoff if the technology was implemented in Bay-Delta ecosystem.

c) How is this project consistent with local and regional resource management plans?

- MWDSC Integrated Resources Plan. This plan seeks to put conservation measures on equal footing with supply measures to meet the region's water needs. This can only be defensible if reliable and measurable savings can be determined.
- Urban Water Management Plans. Water softeners need to be assessed to systematically determine if they are an important potential savings category in most urban water plans. Water softeners may turn out to be an attractive method of achieving potential savings as we learn more about the implementation practicalities.

- The MOU and BMPs. This program generally contributes to the MOU conservation objectives. It is an example of a technological development that provides potential for developing Potential Best Management Practices 2 and 3. It may also be the basis for modifying BMP 1 – Residential Water Surveys.
- Both the Orange County and Inland Empire groundwater basin management plans would be supported by efficient softener management, which reduces contaminants in sewer inflows and reduces demand for low TDS blending water.

3. Nature, Scope, And Objectives of The Project

a) Nature of the Project

Residential water softeners present several important challenges and opportunities:

- There are growing number of water softeners; consumer demand for high quality water is high.
- Self-regenerating softeners use extra water and produce salty wastewater.
- Some of the recent technology self-regenerating units are more efficient with water and salt than the old ones.
- Central-plant regeneration (replaceable units) can add scale-efficiencies in the use of water and salt, and provide salt disposal (e.g., brine line disposal).

b) Scope

- Orange County and Inland Empire Utility Agency service areas.
- Residential installation of 1,000 water and salt efficient OR non-self-regenerating units.
- Both single-family and multi-family sectors.

c) Objectives

Contribute to CALFED, state, regional, and local conservation goals by:

- Implementing a water softener conservation program
- Adding to, and disseminating, knowledge of the magnitude and character of the problem
- Developing effective implementation program designs and testing them
- Characterizing applicability of the results to other regions in California
- Consider adopting water softeners as a BMP or as a PBMP.

Technical/Scientific Merit, Feasibility, Monitoring, and Assessment

4. Methods, Procedures, and Facilities

Task 1: Assess Magnitude and Scope of Problem.

- Survey households to determine current saturation of softeners—self-regenerating and replacement types
- Contact and work with industry marketing groups
- Search for prevalence statistics in the literature and in other programs
- Search for information on the salt problem in the literature and in other programs
- Closely follow the key IRWD-AWWARF project that is assessing the sources of salinity and the contribution of water softeners
- Summarize other attempts to reduce water softener problems:
  - IRWD ban on softeners (pre SB 1006)
  - SB 1006
  - San Jose Water Company residential water softener program

Task 2: Assess costs and benefits of alternative program designs.

Examples of alternative program designs include:

- Consumer information on water, salt, and energy efficiency (low intervention end of the spectrum)
- Incentives for water- and salt-efficient units
- Collaborative program with softener industry marketing efforts
- Requirement for water- and salt-efficient units
- Ban on inefficient units
- Ban on all self-regenerating units (high intervention end of the spectrum)

Task 3: Design and implement pilot program.

For example:

- Work with softener industry marketing staff
- Develop collaborative program and create incentive for replaceable regeneration units (central processing) and/or self-regenerating units that are water and salt efficient.
- E.g., Softener companies could offer a discount for preferred systems, leveraging the value of their marketing plan. Agencies could offer co-pay shares or a bulk purchase and discount sale program. Agencies could also cover installation costs.

Task 4: Evaluate Pilot Program. We plan to include a substantial evaluation component in the program to assess costs, savings, and implementation effectiveness.

- Savings Analysis. Determine savings from efficient or non-self-regenerating water softeners.
- Implementation Analysis. Assess alternative program designs for implementing a program for residential water softener conservation.
- Cost-Effectiveness Analysis. Compare costs to the water savings achievable with water softener conservation programs.

Task 5: Report and Dissemination.

- Draft and final report, including evaluation and program summaries.
- Web sites and water planning conferences.
- Discuss opportunities for expansion and applicability to other service areas.

Task 6: Coordination and Administration

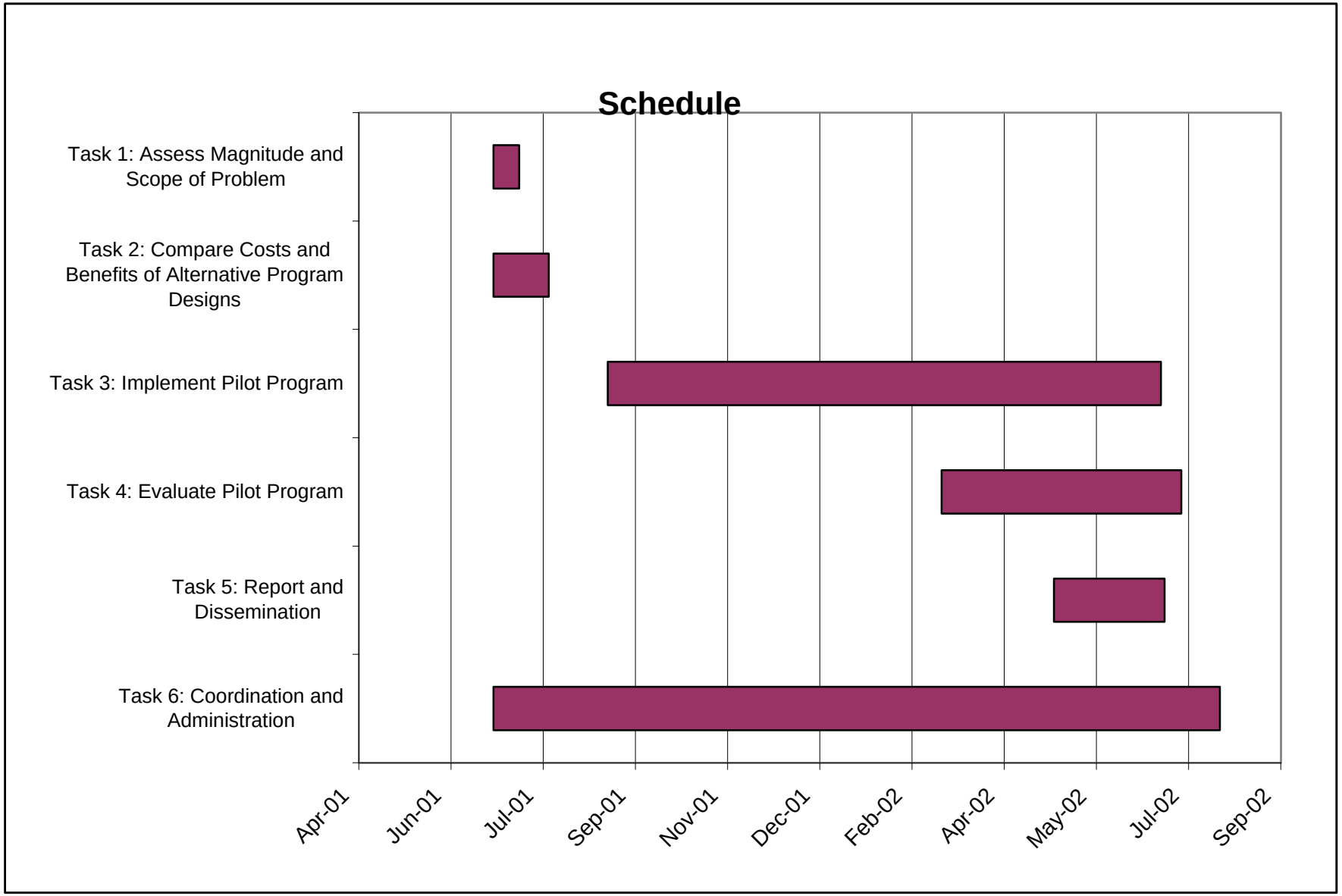
5. Schedule

Schedule

Task	Start Date	Duration (Days)	End Date
Task 1: Assess Magnitude and Scope of Problem	1-Jul-2001	14	14-Jul-01
Task 2: Compare Costs and Benefits of Alternative Program D	1-Jul-2001	30	30-Jul-01
Task 3: Implement Pilot Program	1-Sep-2001	300	27-Jun-02
Task 4: Evaluate Pilot Program	1-Mar-2002	130	8-Jul-02
Task 5: Report and Dissemination	1-May-2002	60	29-Jun-02
Task 6: Coordination and Administration	1-Jul-2001	394	29-Jul-02

Quarterly Expenditure Projection

	Q1	Q2	Q3	Q4	Q5	Total
Percent	25.0%	35.0%	25.0%	10.0%	5.0%	100.0%
Total	$ 89,251	$ 124,952	$ 89,251	$ 35,701	$ 17,850	$ 357,005
Grant	$ 25,000	$ 35,000	$ 25,000	$ 10,000	$ 5,000	$ 100,000


Schedule
Task 1: Assess Magnitude and Scope of Problem
Task 2: Compare Costs and Benefits of Alternative Program Designs
Task 3: Implement Pilot Program
Task 4: Evaluate Pilot Program
Task 5: Report and Dissemination
Task 6: Coordination and Administration
Apr-01
Jun-01
Jul-01
Sep-01
Nov-01
Dec-01
Feb-02
Apr-02
May-02
Jul-02
Sep-02

(Schedule bar chart here)

6. Monitoring and Assessment

- Include a substantial evaluation component in the program to assess costs and savings.
- Data from residential surveys is compiled in a database; for this project add data fields regarding water softeners.
- Cost data is maintained by implementing agency.
- Savings can be assessed with billing histories, which are already maintained at the retail agencies.
- A summary report and data will be available at the end of the evaluation.

C. Outreach, Community Involvement, and Information Transfer

1. Outreach Efforts to Contact and Involve Disadvantaged Communities.

The program will test target multi-family sites with low income residents and consider ways to reduce water costs to low income residents.

2. Training, Employment, and Capacity Building Potential.

Most of the training, employment, and capacity building potential of this project is from the vendors and contractors that install and service the equipment.

3. Plan for Disseminating Information and Promoting Project Application.

- Final report
- MWDOC web site
- AWWA conferences
- CUWCC committees
- Agency boards of directors
- Press releases

4. Letter Sent to The Local Land Use Entity, Water District, or Other Potentially Impacted or Cooperating Agencies Notifying Them of The Proposal.

No letter has been sent due to no anticipated negative impacts to associated agencies.

D. Qualifications of the Applicants, Cooperators, and Establishment of Partnerships

Joseph M. Berg

17 Mira Segura
Rancho Santa Margarita, CA 92688
949-766-0971
josephmberg@home.com

KEY QUALIFICATIONS:

- Proven ability to develop multi-jurisdictional programs and funding partnerships
- Extensive knowledge of all sectors of urban water planning and protection
- Strong public speaking experience to local, regional, state and international governments
- Demonstrated ability to inspire, motivate, and lead within a team environment
- Established project development and management experience
- Window 2000, Microsoft Office, Microsoft Internet Explorer, Netscape proficient

EXPERIENCE:

1/98 – present Municipal Water District of Orange County, Fountain Valley, CA
Title: Water Use Efficiency Programs Manager Phone: 714-593-5008

- Developed and planned demand side management programs valued at more than $6 million annually for the Orange County region
- Provided team leadership for 2000 Regional Urban Water Management Plan of Orange County
- Planned and directed all hiring and staffing for the agency and consultants providing professional services
- Demonstrated county and state leadership in advancing water management, conservation, and environmental policy
- Submitted reports to meet state and federal compliance
- Prepared and maintained departmental budget
- Identify market opportunities for development of expanded programs

3/95 – 1/98 Municipal Water District of Orange County, Fountain Valley, CA
Title: **Water Use Efficiency Programs Supervisor**

- Expanded grant proposal funding to $4 million annually
- Forged new partnerships with local, regional and state elected officials
- Presented water conservation and environmental concerns to all branches of State government, advocating a collaborative

approach to policy design, program assessment and implementation

7/93 – 3/95 Municipal Water District of Orange County, Fountain Valley, CA
Title: **Conservation Coordinator**

- Acquired $3 million in private and public funding grants to off-set public cost of water program implementation
- Produced 1995 Regional Urban Water Management Plan for Orange County including demand estimate, identification of water supply options, conservation activities, and water shortage contingency plan as required by State regulation

11/91 – 7/93 Municipal Water District of Orange County, Fountain Valley, CA
Title: **Public Affairs Assistant**

- Acquired $2 million in private and public funding grants to off-set public cost of water program implementation
- Developed and implemented public and retail agency water conservation programs
- Conducted public relation campaign designed to promote awareness of residential conservation and environmental programs

2/91 – 11/91 San Diego County Water Authority, San Diego, CA
Title: **Water Conservation Intern**

- Gained general knowledge of broad based water programs
- Developed educational program to inform customer about conservation strategies and opportunities
- Planned and managed quality control of ultra low-flush toilet program

EDUCATION:

9/88 – 6/91 San Diego State University, San Diego, CA
Major: Bachelor of Arts, Resource and Environmental Geography

9/85 – 6/88 Saddleback Community College, Mission Viejo, CA
Major: Associate of Arts, General Education

ACTIVITIES:

May 2000 Guest Speaker, Balleric Island, Spain – Environmental Water Conf.

- Topic - Innovative Partnerships for Water Conservation

2000 Convener, California Urban Water Conservation Council

- Developed a three year strategic plan

1/99 – present Vice Chair, Santa Margarita WD Community Advisory Board

- Initiated more consumer involvement in advisory board

1/98 – present Board Member, Norte Vista Maintenance Corporation

5. Role of External Cooperators

The role of the external cooperators will consist of the following:

- Project direction and oversight
- Funding support
- Site location
- Assessment of project costs and benefits from different agency perspectives: groundwater, wastewater, reclamation, wholesale and retail water supply. Identify cost-effective opportunities for cooperation on additional programs where mutually beneficial.
- Assessment of implementation barriers and opportunities at different agency perspectives.

6. Partnerships Developed to Implement the Project.

a) Orange County Sanitation District.

OCSD has been a long-standing collaborator with MWDOC in the development of water conservation programs. OCSD has particular interest in this project because of its potential benefits in terms of sewer flow contamination reduction.

b) Orange County Water District

As the manager of Orange County's groundwater basin, OCWD is interested in the project because of its ability to reduce demand for low TDS groundwater by reducing demand.

c) Inland Empire Utility Agency

By providing an alternative test site, the IEUA adds important breadth to the project coverage. It is moving aggressively to make useful its very large potential capacity for groundwater storage, which is 500,000 AF in short development and 1 million AF capacity in the longer term development.

d) Metropolitan Water District of Southern California

As the major regional wholesaler water importer, MWDSC is the essential link between the Orange County and Inland Empire service areas and the Bay-Delta ecosystem in Northern California. Reduction and management of demand allows MWDSC to better serve its member agencies with reliable and high quality supply. MWDSC has a history of supporting conservation programs and has shown interest in assisting the development of conserving technologies, bringing them to the field, and assessing their quantifiable and reliability yield as well as cost.

e) Retail Agencies Throughout Orange County and Inland Empire Service Areas

Individual agencies throughout the service areas will participate in a variety of roles depending on their particular interest in the program and service area characteristics.

D. Costs and Benefits

1. Budget Summary And Breakdown

(See next page)

(Budget spreadsheet printout here)

Budget: Water Softener Conservation Pilot Program

	MWDOC		Collaborating Agencies		Evaluation		Total	
Task	Hours	$75/hr.	Hours	$75/hr.	Hours	$100/hr.	Hours	$/Task
Task 1: Assess Magnitude and Scope of Problem	20	$ 1,500	20	$ 1,500	45	$ 4,500	85	$ 7,500
Task 2: Compare Costs and Benefits of Alternative Program D	45	$ 3,375	45	$ 3,375	45	$ 4,500	135	$ 11,250
Task 3: Implement Pilot Program	120	$ 9,000	120	$ 9,000	20	$ 2,000	260	$ 20,000
Task 4: Evaluate Pilot Program	10	$ 750	10	$ 750	150	$ 15,000	170	$ 16,500
Task 5: Report and Dissemination	60	$ 4,500	32	$ 2,400	31	$ 3,100	123	$ 10,000
Task 6: Coordination and Administration	80	$ 6,000	80	$ 6,000	14	$ 1,400	174	$ 13,400
Total	335	$ 25,125	307	$ 23,025	305	$ 30,500	947	$ 78,650

Direct Labor Cost	$ 25,125	$ 23,025	$ 30,500	$ 78,650
Fringe Benefits	included	included	included	included
Overhead (at 1.7)	$ 42,713	$ 39,143	included	$ 81,855
Local Travel and Transportation	$ 500	$ 500	$ 500	$ 1,500
Installation Costs	$ 47,500	$ 47,500	$ -	$ 95,000
Softener Costs	$ 50,000	$ 50,000	$ -	$ 100,000
Total Participant Costs	$ 165,838	$ 160,168	$ 31,000	$ 357,005
In-Kind	$ 22,000	$ 22,000	$ 6,000	$ 50,000
Cash	$ 143,838	$ 138,168	$ 25,000	$ 307,005

Total Project Cost	$ 357,005
In-Kind Contributions	$ 50,000
Participant Cash Contributions	$ 207,005
Requested Grant Funding	$ 100,000

Schedule

Task	Start Date	Duration (Days)	End Date
Task 1: Assess Magnitude and Scope of Problem	1-Jul-2001	14	14-Jul-01
Task 2: Compare Costs and Benefits of Alternative Program D	1-Jul-2001	30	30-Jul-01
Task 3: Implement Pilot Program	1-Sep-2001	300	27-Jun-02
Task 4: Evaluate Pilot Program	1-Mar-2002	130	8-Jul-02
Task 5: Report and Dissemination	1-May-2002	60	29-Jun-02
Task 6: Coordination and Administration	1-Jul-2001	394	29-Jul-02

Quarterly Expenditure Projection

	Q1	Q2	Q3	Q4	Q5	Total
Percent	25.0%	35.0%	25.0%	10.0%	5.0%	100.0%
Total	$ 89,251	$ 124,952	$ 89,251	$ 35,701	$ 17,850	$ 357,005
Grant	$ 25,000	$ 35,000	$ 25,000	$ 10,000	$ 5,000	$ 100,000

2. Budget Justification

Labor hours on the part of the lead agency and collaborating agencies cover all of the tasks in the project to a partial or full extent. The program development and implementation will require considerable staff time to complete because this type of program has not been implemented on this scale previously.

The budget includes 1,000 sites at a cost of $100 per site to the agency in the form of capital and installation subsidy. Since there is a range of softener technology, we will develop several cost scenarios.

The evaluation budget includes resources for program assessment by a research consultant.

3. Benefit Summary and Breakdown

a) Quantified Project Outcomes And Benefits

- Water savings, both in total consumption and seasonal profile of demand.

b) Non-Quantified Project Outcomes and Benefits

Regional and State Perspectives
- Reduced demand for water imported from Northern California
- Reduced demand on groundwater resources

Water Agency Perspectives
- Reduced demand for water imported from Northern California

Wastewater Agency Perspectives
- Reduced TDS load into system
- Managed demand for reclaimed water

Groundwater Agency Perspectives
- Reduced demand on groundwater resources

Customer Perspectives
- Reduced water cost (on average)
- Reduced energy bills and reduced water heater repairs

4. Assessment of Costs and Benefits

At this early stage in development, the quantification of costs and benefits would be speculative. After the early tasks of the project are complete, we will be able to assess this more defensibly. In the mean time, we present the following indicators:

Regarding self-regenerating units:

- Some models regenerate only on demand to save water and salt.
- Some models do not use electricity.
- Some have by-pass systems for water use that does not require softening.

a) Summary Table by Beneficiary (Quantified and Non-Quantified Costs and Benefits)

Benefits

Regional and State Perspectives

- Reduced demand for water imported from Northern California
- Reduced surface runoff and contamination
- Reduced demand on groundwater resources

Water Agency Perspectives

- Reduced demand for water imported from Northern California

Wastewater Agency Perspectives

- Reduced TDS load into system
- Managed demand for reclaimed water

Groundwater Agency Perspectives

- Reduced demand on groundwater resources

Customer Perspectives

- Reduced water cost

Costs

Regional and State Perspectives

- Cost share of conservation-oriented water softeners

Water Agency Perspectives

- Cost share of conservation-oriented water softeners

Wastewater Agency Perspectives

- Cost share of conservation-oriented water softeners

Groundwater Agency Perspectives

- Cost share of conservation-oriented water softeners

Customer Perspectives

- Cost share of conservation-oriented water softeners